

DATE: January 5, 2006

FILE REF:

TO: Eileen Pierce – AM/7  
Jon Heinrich – AM/7  
Ed Miller - SERFROM: Mark K. Allen – AM/7  
David Grande – AM/7

SUBJECT: 2006 Statewide Urban Air Toxic Monitoring Plan

*1. Monitoring Objectives*

Urban Air Toxics Monitoring (UATM) will be conducted to obtain information on ambient concentrations of volatile organic compounds (VOCs), semi-volatile organic compounds, and non-volatile metals that are hazardous to human health. This program incorporates six monitoring stations located throughout Wisconsin. While most of the UATM monitoring is conducted in urban areas, Wisconsin's program does include some monitoring at remote locations to establish background concentrations of selected pollutants. The compound species to be collected and monitored are listed in Table 3 (attached). Please be sure to note that not all parameters are analyzed year round.

*2. General Considerations**a. Siting*

Sample collection for all parameters will be conducted at the UATM sites listed below;

<b>Table 1: UATM Monitoring Sites</b>							
<b>City</b>	<b>Site Name</b>	<b>AIRS#</b>	<b>VOCs</b>	<b>Carbs</b>	<b>PCBs</b>	<b>Metals</b>	<b>NH3</b>
Madison <sup>1</sup>	East High	55-025-0041	X	X		X (as TSP)	
Mayville	Mayville	55-027-0007	X	X		X (as PM10)	X <sup>2</sup>
Milwaukee	Sixteenth Street	55-079-0010	X	X	X	X (as TSP)	
Crandon	Potawatomi	55-041-0007				X (as TSP)	
1. The Madison site restarted operations in September 2004. This site is part Regional AT network. Samples are analyzed at ERG.							
2. Ammonia monitoring is conducted on coated denuders. Analysis is conducted at the ISWS							

b. Routine Sampling Schedule (24 Hour Samples)

<b>Table 2: Sampling Schedule for Statewide Urban Air Toxics<sup>1</sup></b>		
Monitoring Parameters	January 5, 2006 to December 31, 2006	Sampling Period
VOCs and Carbonyls	1/6 (Mayville & Madison) 1/12 days (Milwaukee)	24-hours
PCBs (semi-volatiles)	1/12 days	72-Hour <sup>2</sup>
Metals (non-volatiles)	1/6 (Mayville) 1/12 (Madison) 1/30 days (other sites)	24-Hour
Hexavalent Chromium	1/6 (Mayville)	24-Hour
<sup>1</sup> – For operating simplicity and to conform to the national sampling program, the sampling schedule will follow the same schedule dates that are used by the particulate network. <sup>2</sup> - All sampling periods are 72-hours.		

c. Operations

Mark Allen will serve as the overall Project Manager for UATM monitoring and will provide general assistance in all areas of the monitoring project; David Grande will assist in this effort.

i. Task #1 - Sample Collection

Darlene Luehring and Michael Olson will be responsible for the collection of samples at the Mayville site. This will include the collection of quality control samples (blanks, duplicates, collocates and spikes).

Southeast Regional Monitoring staff will be responsible for the collection of samples from Sixteenth Street sites. This will include the collection of quality control samples (blanks, duplicates, collocates and spikes).

David Grande will serve as liaison chemist for all sites and will take the lead in seeing that this task is accomplished. In addition, he will be responsible for the preparation of PS-1 sampling heads for sampling and ensuring they are available to the operators prior to sampling.

ii. Task #2 - WDNR/Laboratory Coordination

David Grande will be responsible for the coordination of samples between the laboratory and the field. Mark Allen will assist David.

David Grande and Mark Allen will be responsible for resolving technical questions on sampling and analysis.

iii. Task #3 - Canister analysis

The SLOH Environmental Sciences Section will analyze whole air samples, collected in canisters, for air toxics by gas chromatography/mass

spectrometry.

iv. Task #4 - Cartridge analysis

The SLOH - Occupational Health Laboratory will analyze exposed DNPH coated cartridges for carbonyl species using high performance liquid chromatography (HPLC).

v. Task #5 - Semi-volatile Compound analysis

The SLOH - Environmental Sciences Section will analyze PS-1 filters and polyurethane foam plugs (PUFs) for polychlorinated biphenyl species and pesticides using high performance gas chromatography with electron capture detection (GC/ECD). Mass spectroscopy may also be employed for compound confirmation.

vi. Task #5 - Non-volatile Metals analysis

The SLOH - Environmental Sciences Section will analyze TSP and PM10 filters for metals using inductively couple plasma mass spectrometry (ICP-MS).

ERG Laboratory in N.C. will analyze filters for hexavalent chromium using a modified CARB methodology.

vii. Task #6 - Quality Assurance

Steve Schuenemann and Mark Allen will be responsible for QA activities on the monitoring project. These activities will include; Sampling and analysis QC objectives as outlined in Quality Assurance Project Plan; and QA activities developed to support the monitoring efforts.

David Grande will be responsible for conducting and reporting on internal performance audits (zero audits) at VOC and carbonyl monitoring stations. This will include checks of air sampling rates.

viii. Task #7 - Data Management

Mark Allen will provide overall responsibility for the management of data collected on the UATM network. Data Unit will assist Mark.

ix. Task #8 - Data Analysis and Reporting

David Grande and Mark Allen will be responsible for the preliminary data analysis and for writing the final program report.

x. Task #9 - Training

David Grande will coordinate training of the site operators for the program. David will also update and revise the present Standard Operating Procedures.

### 3. *Monitoring Plan Specifics*

#### a. Quality Assurance

Quality assurance objectives, activities and goals for 2000 UATM program will be conducted according to *QA.8.0 Hazardous Air Contaminants Urban Monitoring Program*. A copy of the plan has been included in the UATM handbook.

b. Sample Collection Operating Procedures

Sample collection will be conducted according to the following SOPs from the Wisconsin Air Monitoring Handbook:

OP.1.2. High Volume Sampler;

OP.8.5 PS-1 Sampler for Semi-volatile Organic Compounds; and

OP.11.0 The Automated Combination Cartridge and Canister Sampler

c. Sample Analysis

Sample analyses will be conducted using the SLH and OHL protocols. These protocols follow the general guidance provided in the following methods:

Method TO-14A - Determination Of Volatile Organic Compounds (VOCs) In Ambient Air Using Specially Prepared Canisters With Subsequent Analysis By Gas Chromatography

Method TO-11A: Determination of Formaldehyde in Ambient Air Using Adsorbent Cartridge Followed by High Performance Liquid Chromatography (HPLC)

Method IO-3.4: Determination of Metals Captured on Glass Fiber Filter and Analyzed by Inductively Coupled Plasma (ICP) Spectrometry

d. Sampling Schedule

The sampling schedule for the project is given in Table 4(a), 4(b) and 4(c).

e. Data Management

Many samplers used at the monitoring sites automatically collect the sampling field data. This sampling data will be routinely downloaded over phone lines to the AMPAMS fileservice on the CENTRAL. After editing sampling field data will be downloaded to the WISARDS data system. Laboratory data will be electronically transferred through the DNR's laboratory portal to the WISARDS data system. An adjunct repository of all laboratory and field data will be an ACCESS file on AMPAMS file service of CENTRAL.

The final repository of the laboratory and field data will be in the centrally located WISARDS Database. After being reviewed data will be processed by WISARDS for submission to the EPA's AQS database.

All supporting meteorological monitoring data will be collected and managed by the Central Office Data subunit and the Southeast Regional Data staff using WISARDS.

cc: Ron Arneson - TS/6  
Jeff Myers - AM/7  
Air Monitoring Staff

Natalene Cummings - FCP  
Darlene Luehring - Horicon Service Center

Steve Geis – SLOH  
Terry Burke - WOHL  
Chris Worley – SLOH

John Strauss – SLOH  
Mike Koerber - LADCO  
Motria Caudill - USEPA, Region 5

Attachments

**TABLE 3:UATM Target Volatile Organic Compounds****Table 3a. Non Polar Volatile Organic Compounds**

1,1,1-trichloroethane	71-55-6	Chloroprene	126-99-8
1,1,2,2-tetrachloroethane	79-34-5	c-1,3-dichloropropene	542-75-6
1,1,2-trichloroethane	79-00-5	Dibromochloromethane	124-48-1
1,1 dichloroethane	75-34-3	Ethylbenzene	100-41-4
1,2 dichloroethane	107-6-2	Ethylene dichloride	107-06-2
1,2-dichlorobenzene	95-50-1	Methyl chloride	74-87-3
1,2-dichloropropane	78-87-5	Methylene chloride	75-09-2
1,3-butadiene	106-99-0	Propene	115-07-1
1,3-dichlorobenzene	54-17-3	M-xylene	1330-20- 7
1,4-dichlorobenzene	106-46-7	n-octane	111-65-9
Acetylene	74-86-2	O-xylene	1330-20- 7
Benzene	71-43-2	p-xylene	1330-20- 7
Bromodichloromethane	75-27-4	Styrene	100-42-5
Bromoform	75-25-2	Tetrachloroethene	127-18-4
Bromomethane	74-83-9	Toluene	108-88-3
Carbon tetrachloride	56-23-5	Trichloroethene	79-01-6
Chlorobenzene	108-90-7	t-1,2-dichloroethene	540-59-0
Chloroethane	75-00-3	t-1,3-dichloropropene	542-75-6
Chloroform	67-66-3	Vinyl chloride	75-01-4

**Table 3b. Polar Volatile Organic Compounds**

Formaldehyde	50-0-0	Valeraldehyde	110-62-3
Acetaldehyde	75-07-0	Isovaleraldehyde	590-86-3
Acetone	67-64-1	Hexaldehyde	66-25-1
Propionaldehyde	123-38-6	Benzaldehyde	100-52-7
Butyraldehyde	123-72-8	M/P- Tolualdehyde	
2-Butanone	78-93-3	O-Tolualdehyde	529-20-4
Crotonaldehyde	123-73-9	2,5-Dimethylbenzaldehyde	5779-94-2

**Table 3c. Semi-volatile Organic Compounds**

Total PCBs as Arochlors	1336-36-3	Atrazine	1912-24-9
-------------------------	-----------	----------	-----------

**Table 3d. Non-volatile Metals**

Lead	7439-92-1	Manganese	7739-96-5
Arsenic	7740-38-2	Nickel*	7440-02-0
Cadmium	7440-43-9	Beryllium*	7440-41-7
Chromium - total & Cr(VI)	7440-47-3	* - Mayville only.	

**TABLE 4(a): UATM 2006 Sampling Schedule for Mayville**

1 Qtr		2 Qtr		3 Qtr		4 Qtr	
Date	Sample	Date	Sample	Date	Sample	Date	Sample
01/05/2006	A,B	04/05/2006	Ad,B	07/04/2006	Ad,B	10/02/2006	Ad,B
01/11/2006	Ad,Bd	04/11/2006	A,B	07/10/2006	A,Bd	10/08/2006	A,B
01/17/2006	A,B	04/17/2006	A,B	07/16/2006	A,B	10/14/2006	A,B
01/23/2006	A,B	04/23/2006	A,B	07/22/2006	A,B	10/20/2006	A,B
01/29/2006	A,B	04/29/2006	A,B	07/28/2006	A,B	10/26/2006	A,B
02/04/2006	Ab,B	05/05/2006	Ab,B	08/03/2006	Ab,B	11/01/2006	Ab,B
02/10/2006	A,B	05/11/2006	A,Bd	08/09/2006	A,B	11/07/2006	A,Bd
02/16/2006	A,B	05/17/2006	A,B	08/15/2006	A,B	11/13/2006	A,B
02/22/2006	A,B	05/23/2006	A,B	08/21/2006	A,B	11/19/2006	A,B
02/28/2006	A,B	05/29/2006	A,B	08/27/2006	A,B	11/25/2006	A,B
03/06/2006	A,B,#	06/04/2006	A,B,#	09/02/2006	A,B,#	12/01/2006	A,B,#
03/12/2006	A,Bd	06/10/2006	A,B	09/08/2006	A,Bd	12/07/2006	A,B
03/18/2006	A,B	06/16/2006	A,B	09/14/2006	A,B	12/13/2006	A,B
03/24/2006	A,B	06/22/2006	A,B	09/20/2006	A,B	12/19/2006	A,B
03/30/2006	A,B	06/28/2006	A,B	09/26/2006	A,B	12/25/2006	A,B
						12/31/2006	A,B

**Sampling Schedule Code Key**

A – Ambient sampling for VOCs and Carbonyls

B – Ambient sampling metals

d – duplicate sample

b – trip blank

# - one point flow check

**TABLE 4(b): UATM 2006 Sampling Schedule for Madison Site**

1 Qtr		2 Qtr		3 Qtr		4 Qtr	
Date	Sample	Date	Sample	Date	Sample	Date	Sample
01/05/2006	A	04/05/2006	A,B	07/04/2006	A	10/02/2006	A,B
01/11/2006	A,B	04/11/2006	A	07/10/2006	A,B	10/08/2006	A
01/17/2006	A	04/17/2006	A,B	07/16/2006	A	10/14/2006	A,B
01/23/2006	A,B	04/23/2006	Ab	07/22/2006	A,B	10/20/2006	Ab
01/29/2006	Ab	04/29/2006	A,B	07/28/2006	Ab	10/26/2006	A,B
02/04/2006	A,B,#	05/05/2006	A,#	08/03/2006	A,B,#	11/01/2006	A,#
02/10/2006	A	05/11/2006	A,B	08/09/2006	A	11/07/2006	A,B
02/16/2006	A,B	05/17/2006	A	08/15/2006	A,B	11/13/2006	A
02/22/2006	A	05/23/2006	A,B	08/21/2006	A	11/19/2006	A,B
02/28/2006	A,B	05/29/2006	A	08/27/2006	A,B	11/25/2006	A
03/06/2006	A	06/04/2006	A,B	09/02/2006	A	12/01/2006	A,B
03/12/2006	A,B	06/10/2006	A	09/08/2006	A,B	12/07/2006	A
03/18/2006	A	06/16/2006	A,B	09/14/2006	A	12/13/2006	A,B
03/24/2006	A,B	06/22/2006	A	09/20/2006	A,B	12/19/2006	A
03/30/2006	A	06/28/2006	A,B	09/26/2006	A	12/25/2006	A,B
						12/31/2006	A

## Sampling Schedule Code Key

A – Ambient sampling for VOCs and Carbonyls

B – Ambient sampling metals

d – duplicate sample

b – trip blank

# - one point flow check

<b>TABLE 4(c): UATM 2006 Sampling Schedule for Milwaukee and Statewide Metals Sites</b>							
1 Qtr		2 Qtr		3 Qtr		4 Qtr	
Date	Sample	Date	Sample	Date	Sample	Date	Sample
01/05/2006	Ad	04/05/2006	C	07/04/2006	Ad	10/02/2006	C
01/11/2006	C	04/11/2006	Ad	07/10/2006	C	10/08/2006	A
01/17/2006	A	04/17/2006	C	07/16/2006	A	10/14/2006	C
01/23/2006	C,B	04/23/2006	A,B	07/22/2006	C,B	10/20/2006	A,B
01/29/2006	Ab	04/29/2006	C	07/28/2006	Ab	10/26/2006	C
02/04/2006	C	05/05/2006	Ab,#	08/03/2006	C	11/01/2006	Ab,#
02/10/2006	A,#	05/11/2006	Cd	08/09/2006	A,#	11/07/2006	C
02/16/2006	Cd	05/17/2006	A	08/15/2006	C	11/13/2006	A
02/22/2006	A,B	05/23/2006	C,B	08/21/2006	A,B	11/19/2006	C,B
02/28/2006	C	05/29/2006	A	08/27/2006	Cd	11/25/2006	A
03/06/2006	A	06/04/2006	C,#	09/02/2006	A	12/01/2006	C
03/12/2006	C,#	06/10/2006	A	09/08/2006	C,#	12/07/2006	A
03/18/2006	A	06/16/2006	C	09/14/2006	A	12/13/2006	C,#
03/24/2006	C,B	06/22/2006	A,B	09/20/2006	C,B	12/19/2006	A
03/30/2006	A	06/28/2006	C	09/26/2006	A	12/25/2006	C,B
						12/31/2006	A
<b>Sampling Schedule Code Key</b> A – Ambient sampling for VOCs and Carbonyls B- Ambient sampling metals C – Ambient sampling for PCBs d – duplicate sample b – trip blank # - one point flow check				<b>Site Notes:</b> Milwaukee, Sixteenth Street Health Center site– all samples will be collected. This is the only site for PCB duplicates. . Forest County Potawatomi site – Only Metal samples will be collected.			